

CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Original) A method for regulating a temperature of a catalytic converter in a vehicle including an engine, comprising:

defining a maximum temperature for the catalytic converter;

defining a maximum engine speed threshold;

estimating the temperature of the catalytic converter;

determining actual engine speed; and

shutting off fuel to the engine if the estimated temperature of the catalytic converter is greater than the maximum temperature of the catalytic converter and the actual engine speed is greater than the maximum engine speed threshold.

2. (Original) The method of claim 1 further comprising:

defining a minimum engine speed threshold; and

turning on fuel to the engine if the actual engine speed is less than the minimum engine speed threshold.

3. (Withdrawn) A method for delaying spark retard on a vehicle including a catalytic converter, a controller, and an engine, comprising:

defining a maximum temperature for the catalytic converter;

estimating an actual temperature of the catalytic converter;

generating a spark retard request; and

delaying the spark retard request if the actual temperature is greater than the maximum temperature.

4. (Withdrawn) The method of claim 3 further comprising:

performing the spark retard request if the actual temperature is not greater than the maximum temperature.

5. (Withdrawn) A method for improving proportional/integral torque control in an engine comprising:

determining an RPM error;

determining vehicle speed;

determining an integral torque; and

updating vehicle torque with the integral torque if the RPM error is within an RPM error range and the vehicle speed is less than a maximum vehicle speed for a first period.

6. (Withdrawn) The method of claim 5 further comprising resetting the first period if one of the RPM error is not within the RPM error range and the vehicle speed is not less than the maximum vehicle speed.

7. (Withdrawn) A method for increasing torque to prevent engine stall in a vehicle comprising:

- determining an RPM error;
- defining proportional torque based on the RPM error; and
- increasing torque to the engine by the proportional torque if the RPM error is within an RPM error range.

8. (Withdrawn) A method for updating the integral torque term of a proportional/integral torque controller for an engine in a vehicle comprising:
determining an RPM error; and
updating the integral torque term if the RPM error is within an RPM error range for a first period.

9. (Withdrawn) The method of claim 8 further comprising determining a number of cylinders in the engine that are receiving fuel, wherein the first period is based upon the number of cylinders in the engine that are receiving fuel.

10. (Original) A temperature regulator for a catalytic converter on a vehicle including an engine, comprising:

a temperature estimator that at least one of measures and estimates catalytic converter temperature;

a speed sensor that senses engine speed;

a fuel system that supplies fuel to the engine; and

a controller that communicates with the temperature estimator, the speed sensor, and the fuel system and that shuts off fuel to the engine when the catalytic converter temperature is greater than a maximum temperature and the engine speed is greater than a maximum engine speed.

11. (Original) The temperature regulator of claim 10 wherein the controller continues to shut off fuel to the engine when the engine speed sensor returns an engine speed that is greater than a minimum engine speed.

12. (Withdrawn) A spark retard delaying system for a vehicle including a catalytic converter and an engine, comprising:

a temperature estimator that at least one of measures and estimates catalytic converter temperature;

a power manager that generates a spark retard request; and

a controller that communicates with the power manager and the temperature estimator and that at least one of delays and applies the spark retard request.

13. (Withdrawn) The spark retard delaying system of claim 12 wherein the controller delays the spark retard request when the catalytic converter temperature is greater than a maximum temperature and applies the spark retard request when the catalytic converter temperature is not greater than a maximum temperature.

14. (Withdrawn) A torque controller for an engine comprising:
an error estimator that estimates RPM error;
a speed sensor that senses vehicle speed; and
a controller that communicates with the RPM error estimator and the vehicle speed sensor, that determines an integral torque term, and that sets a learned torque correction equal to the integral torque term when the RPM error is within an RPM error range for a first period and the vehicle speed is less than a maximum vehicle speed.

15. (Withdrawn) A torque controller for increasing torque to prevent engine stall in a vehicle comprising:

an error estimator that estimates RPM error; and

a controller that communicates with the RPM error estimator and increases torque to the engine by a proportional torque term when the RPM error is greater than a maximum RPM error.

16. (Withdrawn) A torque controller that updates the integral term of a proportional/integral torque controller for an engine in a vehicle comprising:

- an error estimator that estimates RPM error; and
- a controller that communicates with the error estimator and that updates an integral torque term with an integral gain when the RPM error is less than or equal to a predetermined integral RPM error for a first period.

17. (Withdrawn) The apparatus of claim 16 further comprising an engine speed sensor that senses engine speed and a module that determines a number of cylinders in the engine that are receiving fuel and wherein the first period is based upon an engine speed and the number of cylinders in the engine that are receiving fuel.